

Fig.1
(PRIOR ART)

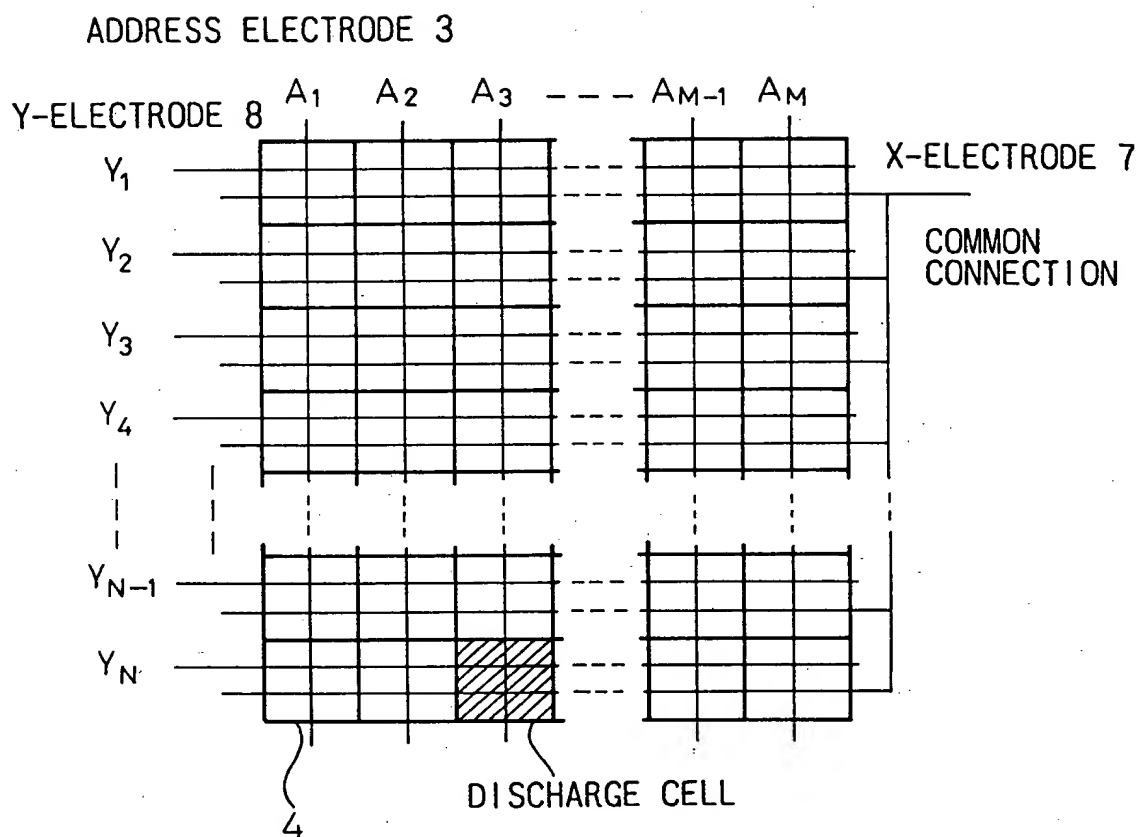


Fig.2
(PRIOR ART)

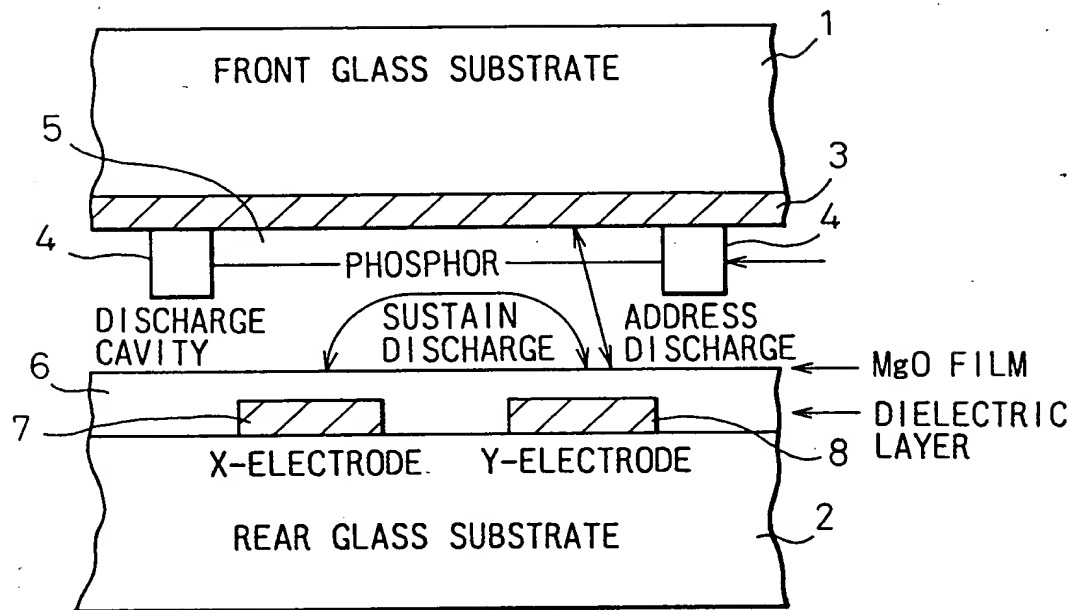
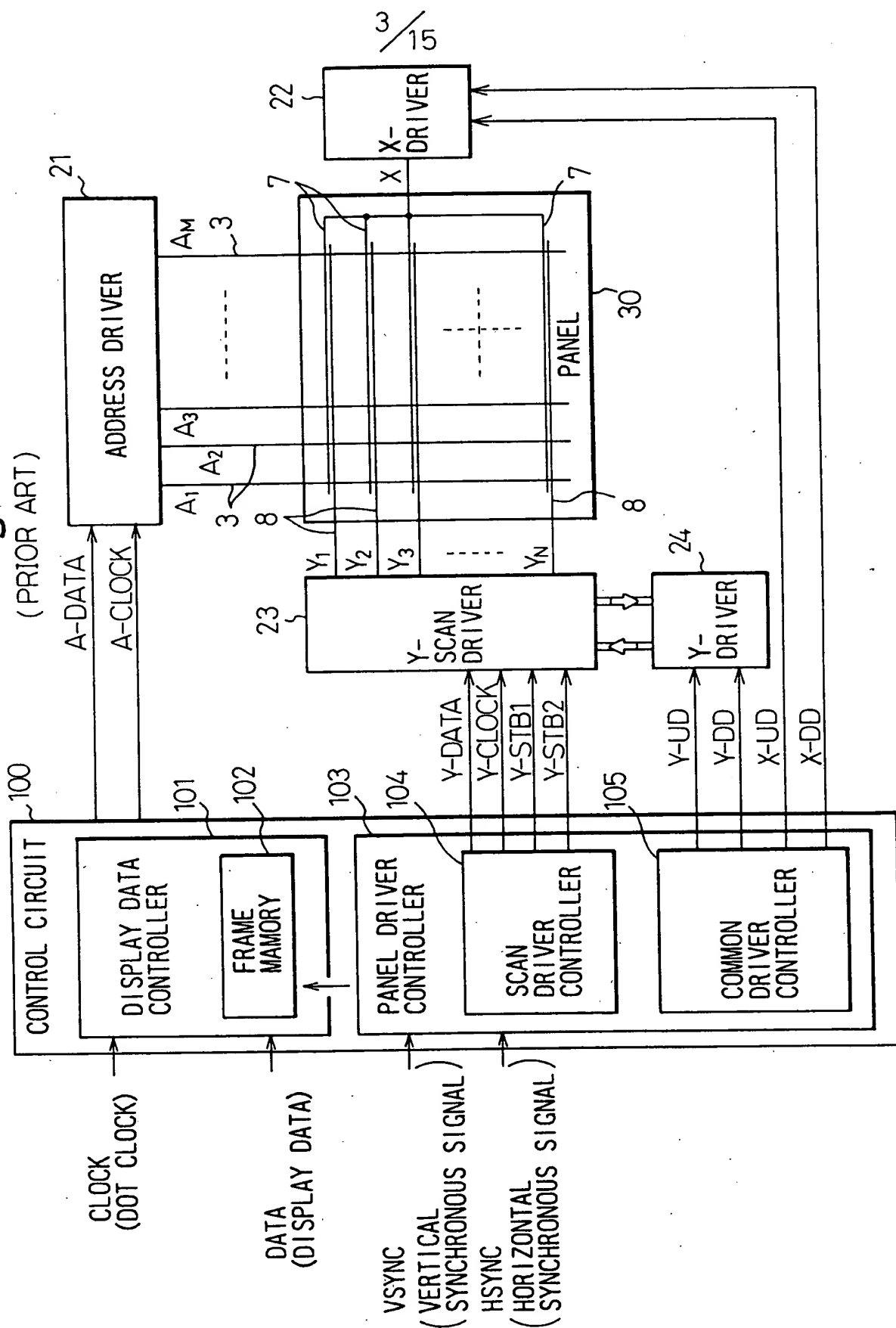


Fig.3



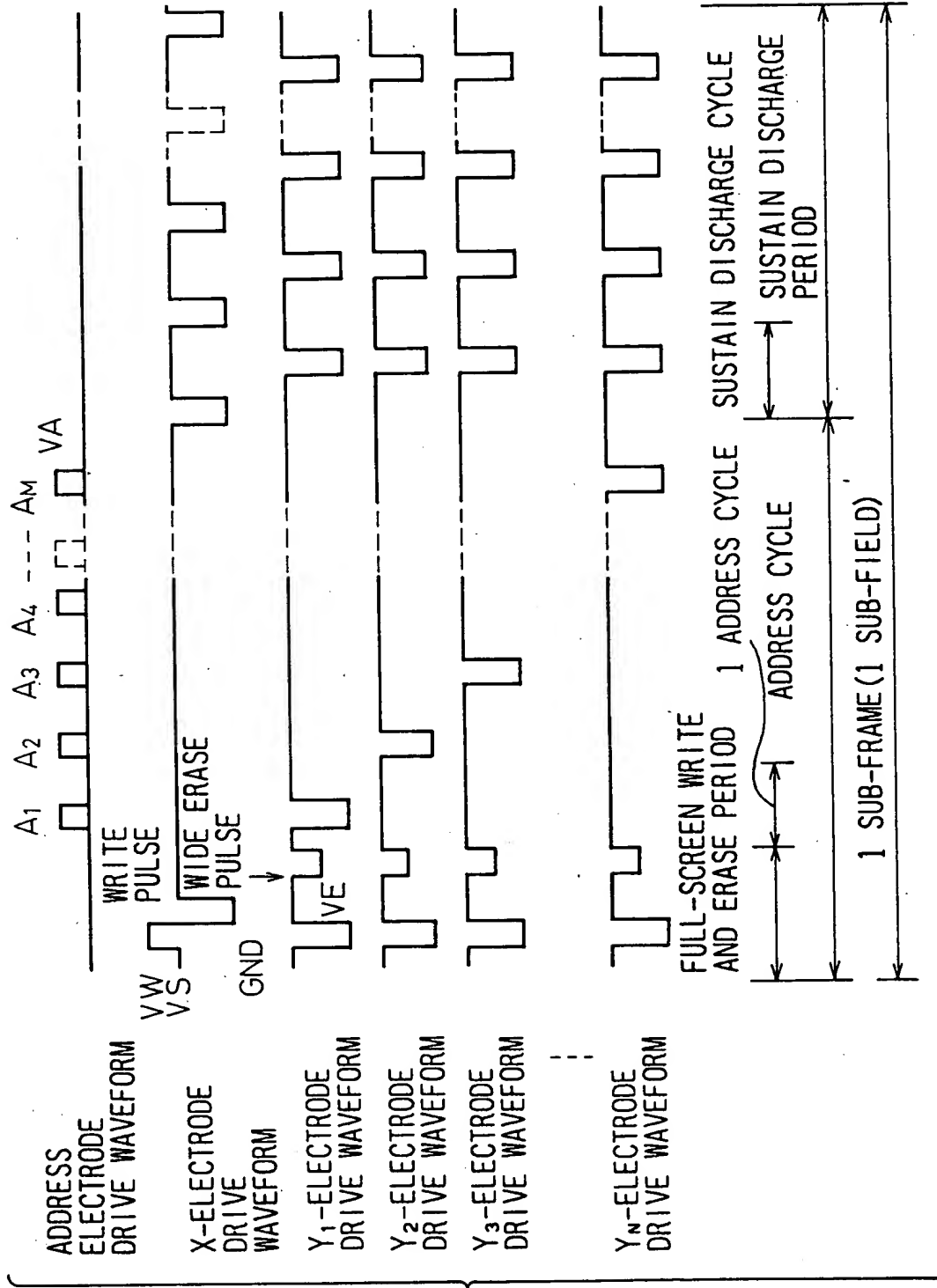


Fig.4
(PRIOR ART)

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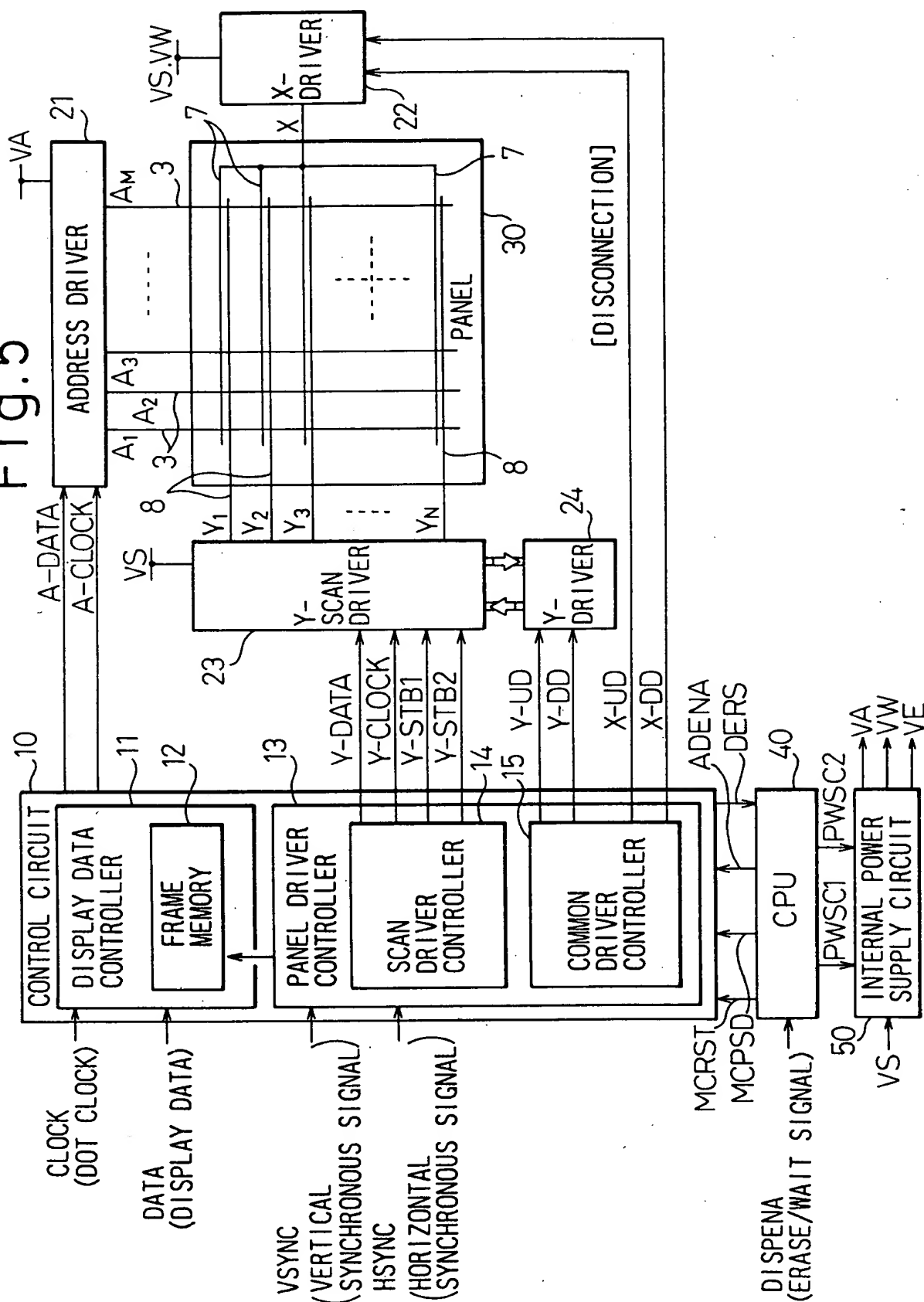


Fig.6A

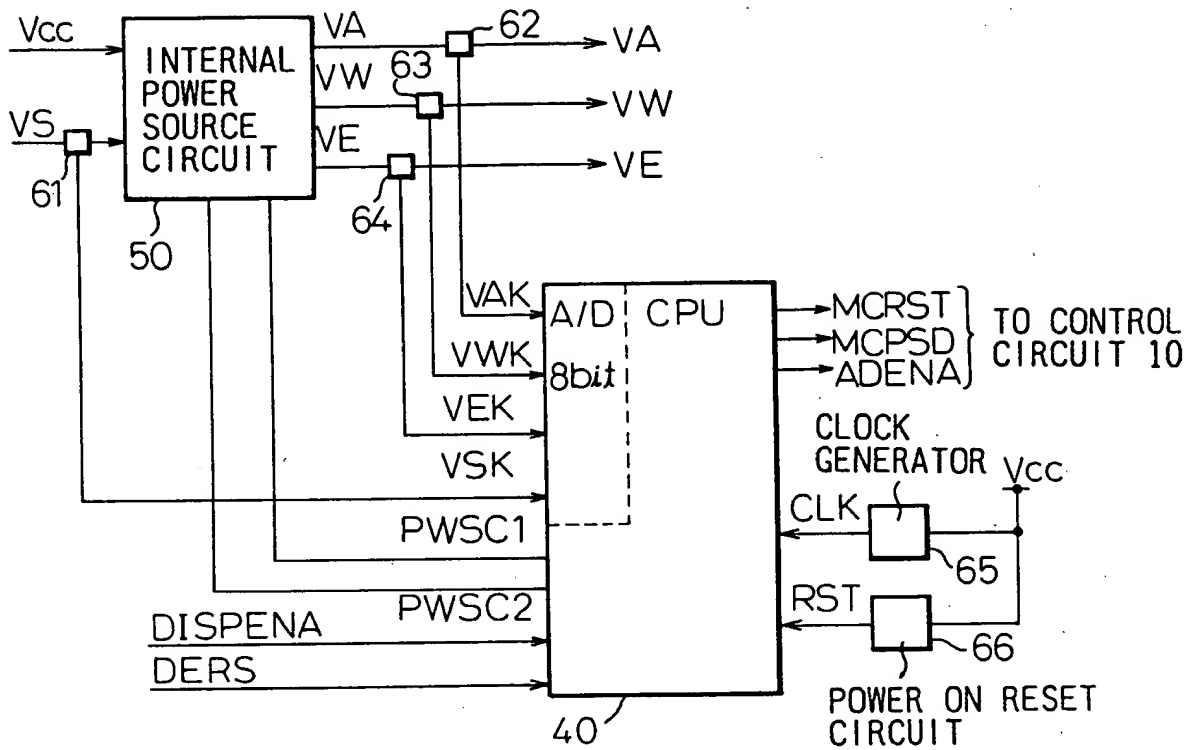


Fig.6B

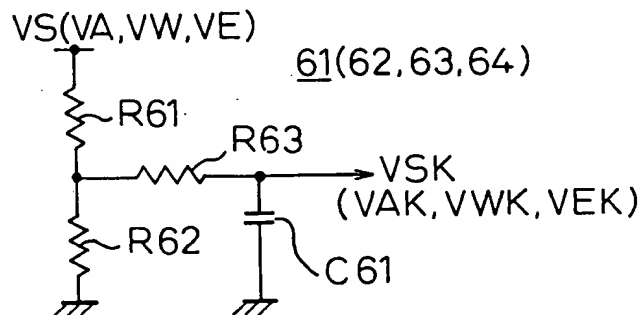
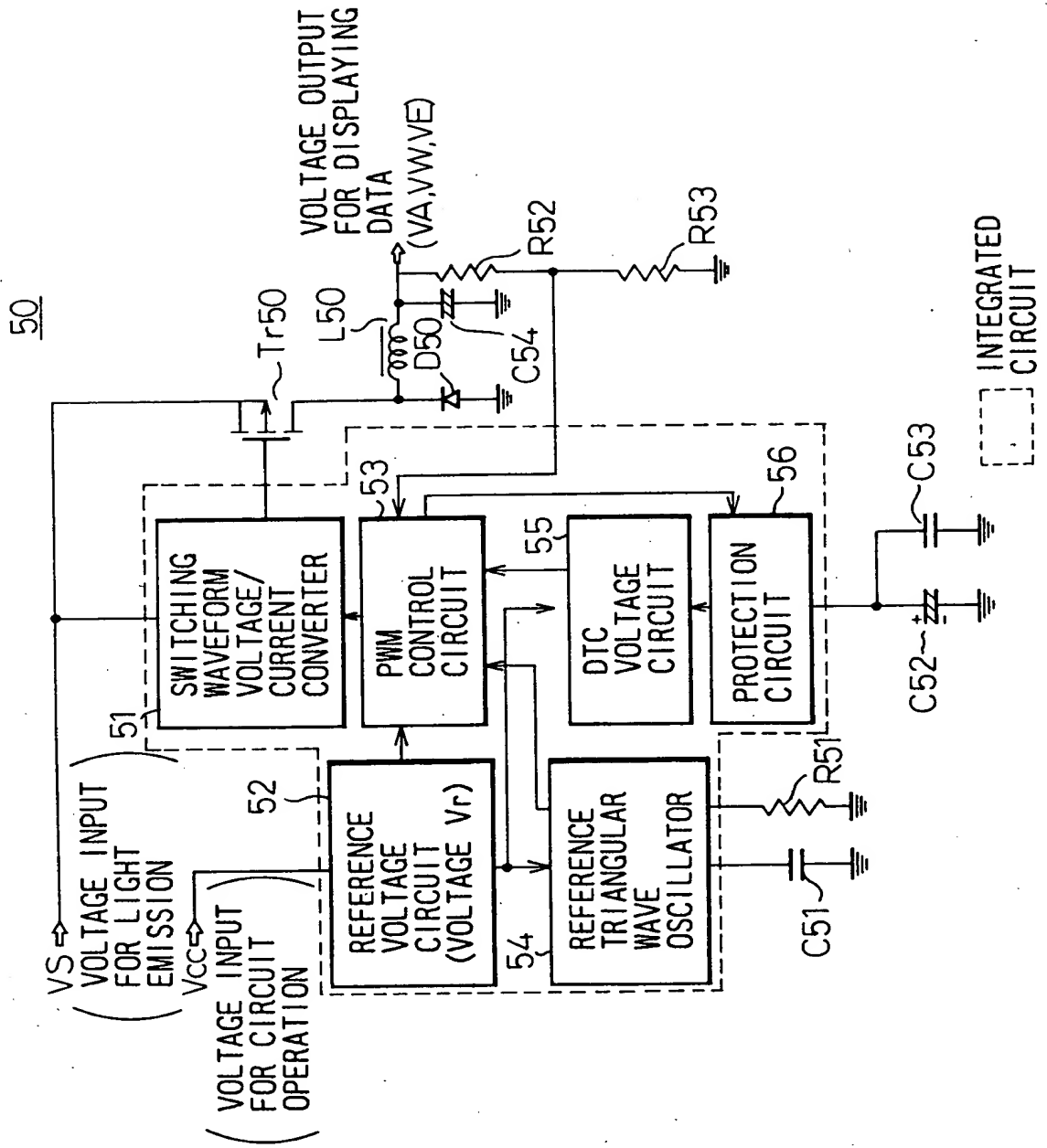


Fig.7



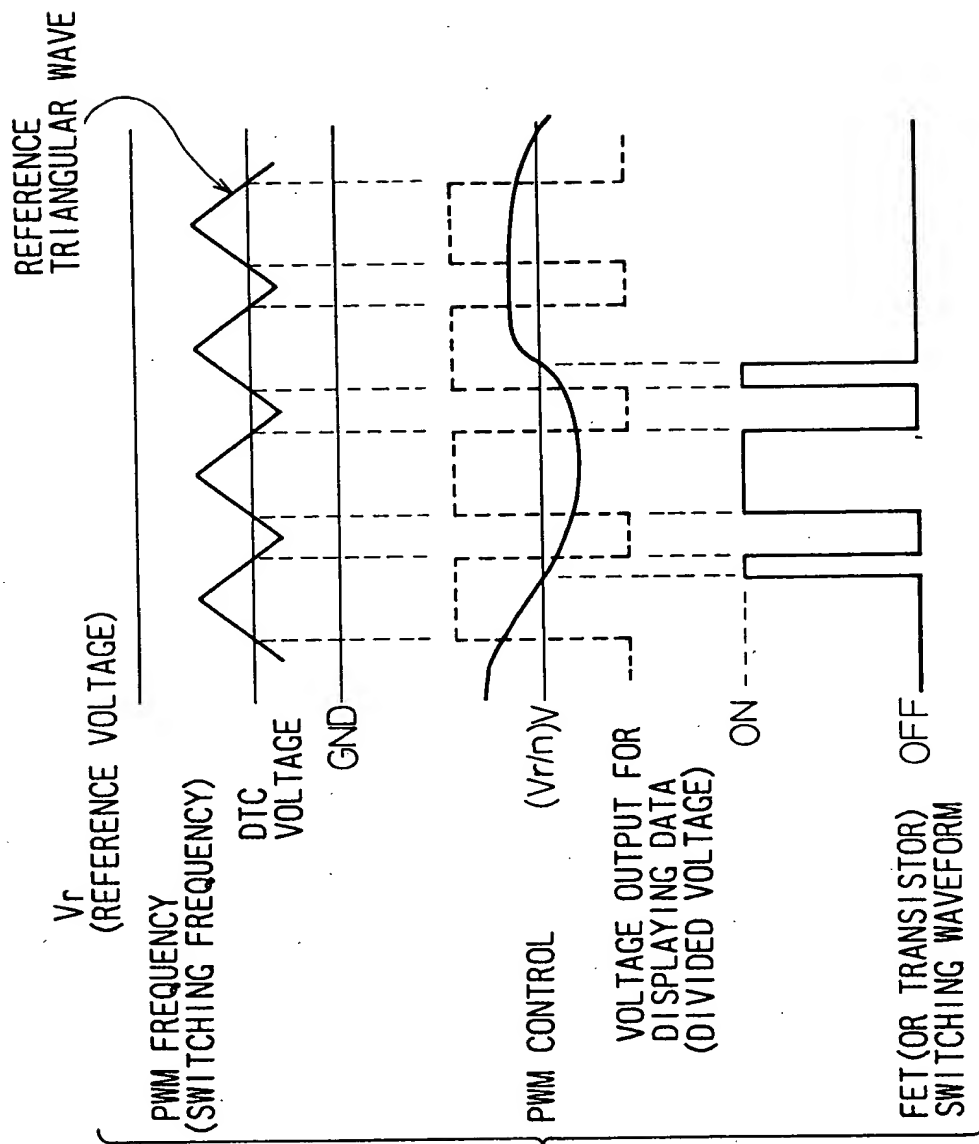


Fig.9

Fig.10

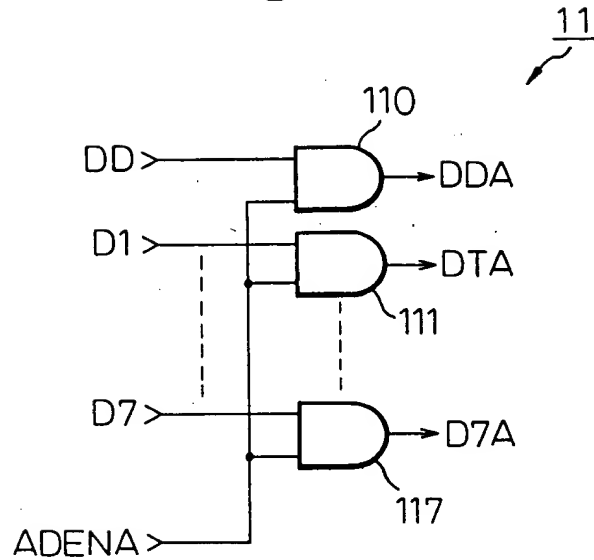


Fig.11

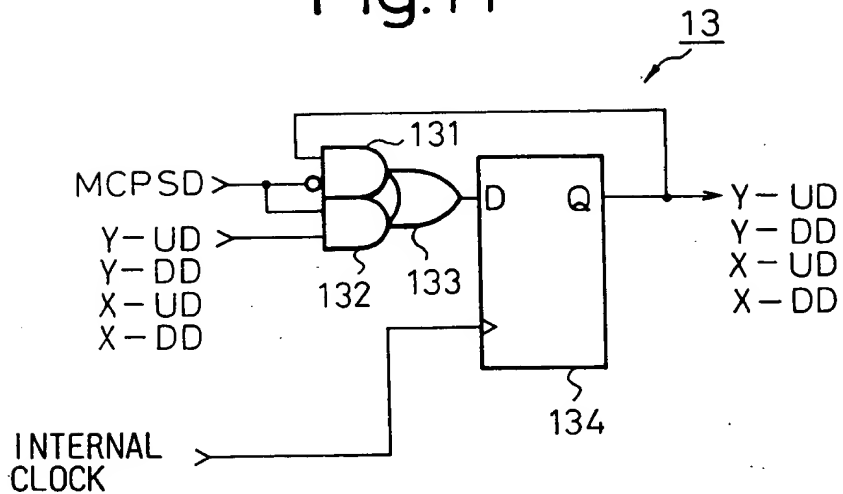
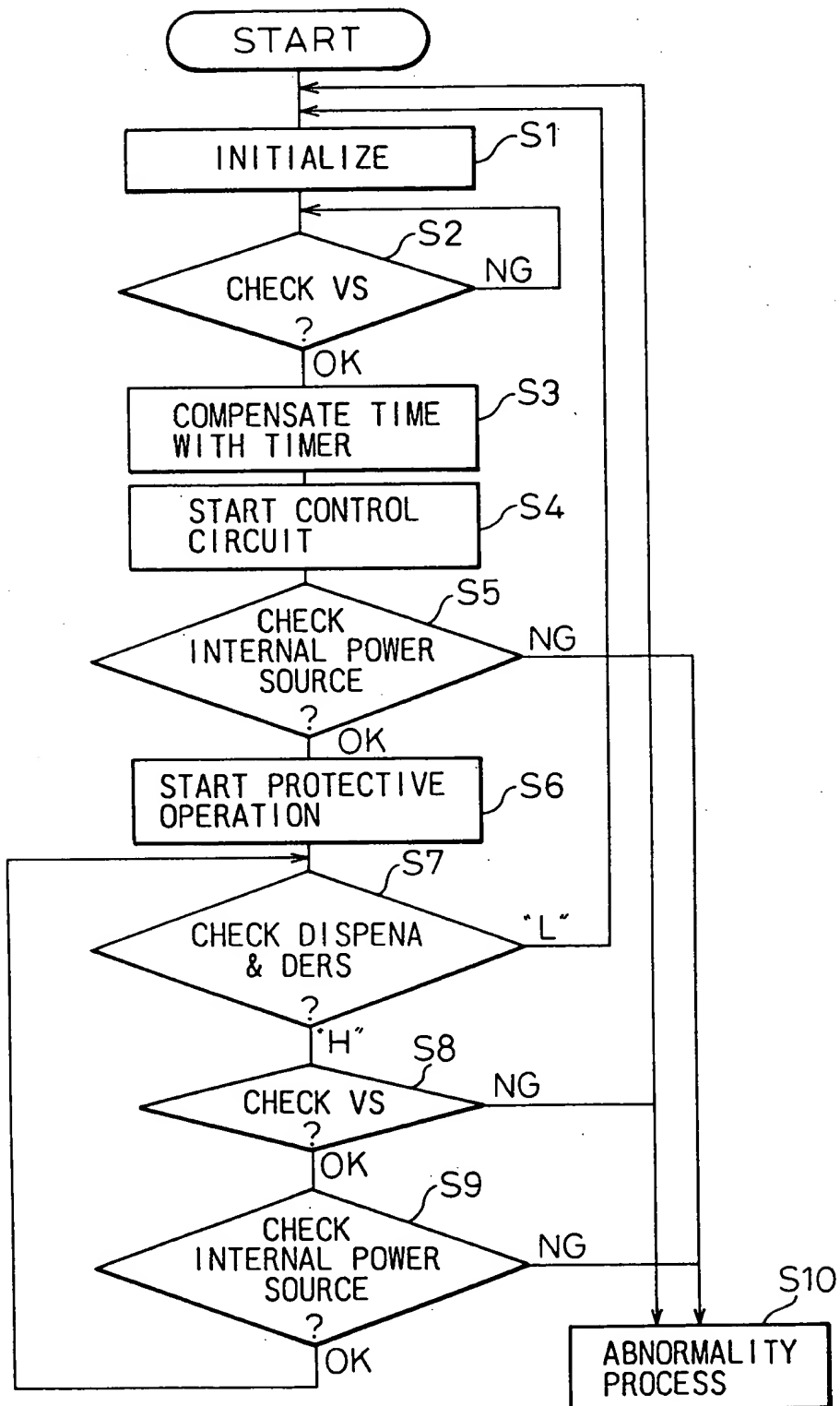


Fig.12



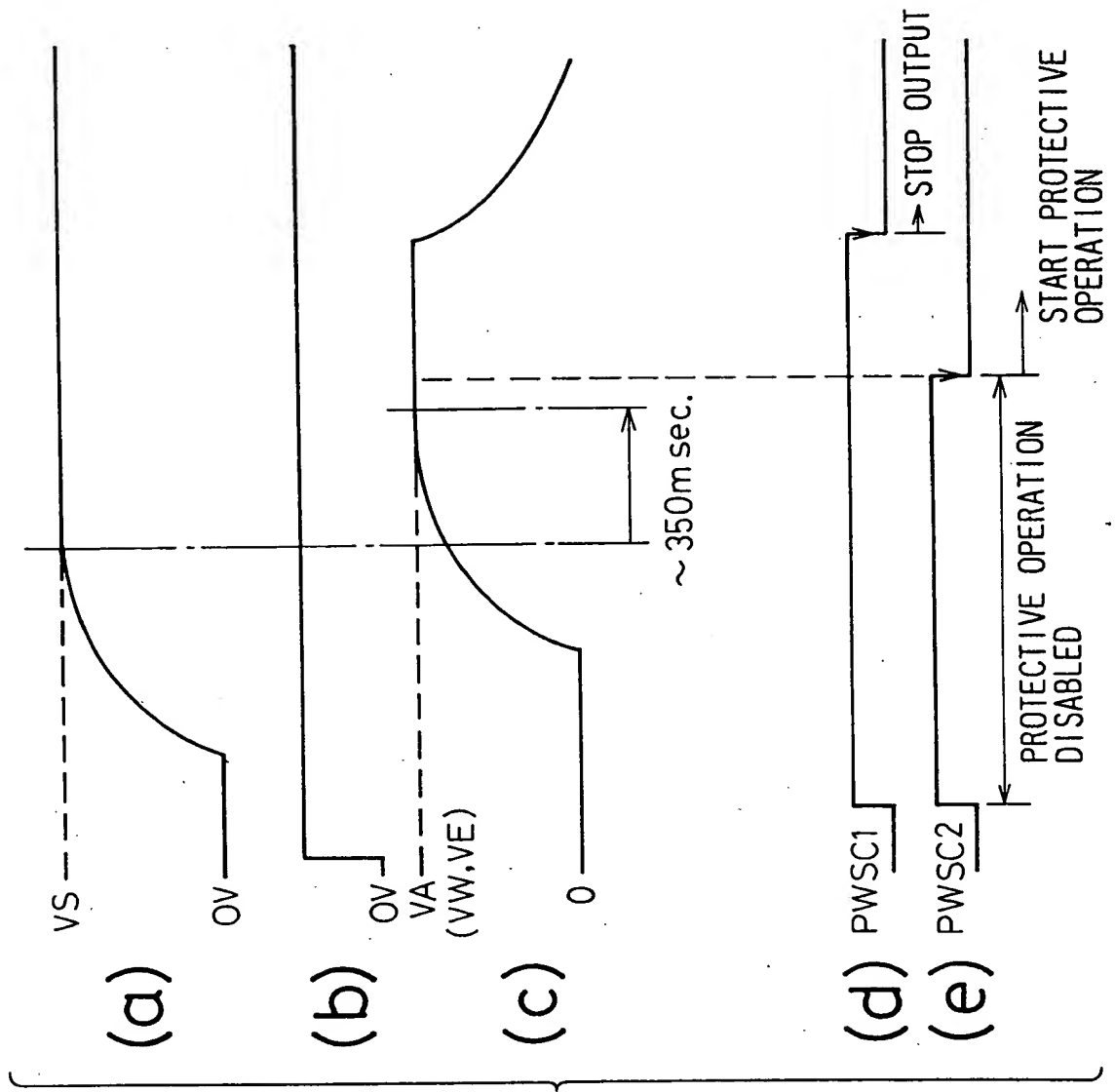


Fig.13

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Fig.14

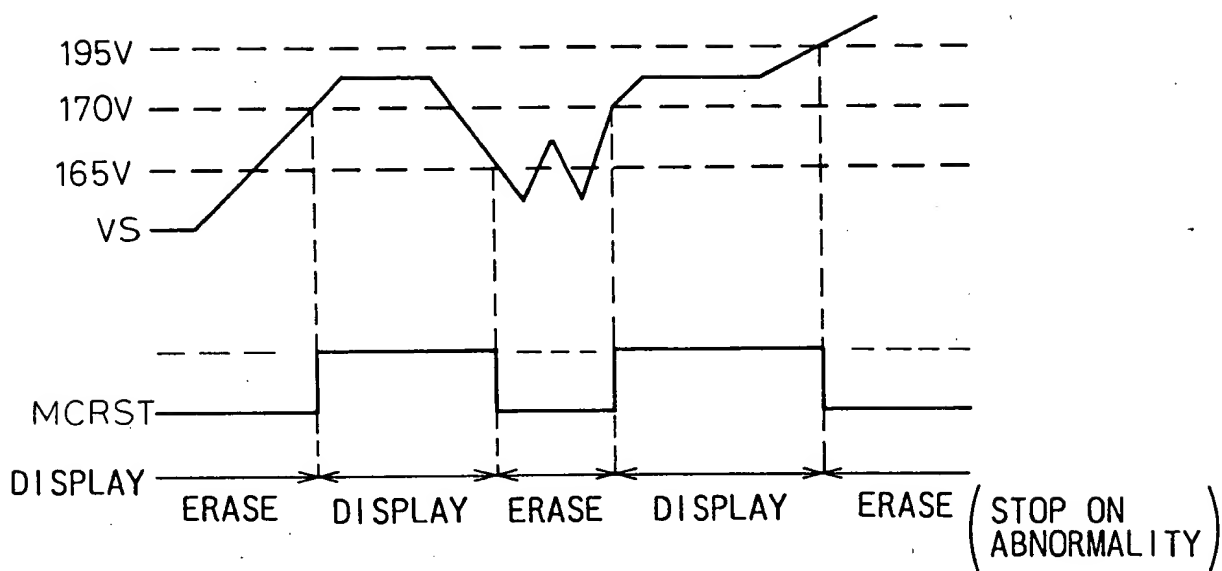


Fig. 15

The diagram illustrates a display system architecture. A **CONTROL CIRCUIT (10)** is the central component, containing a **DISPLAY DATA CONTROLLER (11)**, **FRAME MEMORY (12)**, **PANEL DRIVER CONTROLLER (13)**, **SCAN DRIVER CONTROLLER (14)**, and **COMMON DRIVER CONTROLLER (15)**. The **CPU (40)** is connected to the control circuit and an **INTERNAL POWER SUPPLY CIRCUIT (50)**. The **INTERNAL POWER SUPPLY CIRCUIT (50)** provides power signals: **VS**, **VW**, **VA**, and **VE**. The **CPU (40)** outputs **DISPENA (ERASE/WAIT SIGNAL)**, **MCRST**, **MCPSD**, **PWSC1**, and **PWSC2** to the control circuit. The control circuit outputs various signals to the **PANEL (8)**: **VS** (vertical synchronous signal), **HS** (horizontal synchronous signal), **Y-DATA**, **Y-CLOCK**, **Y-STB1**, **Y-STB2**, **Y-UD**, **Y-DD**, **X-UD**, **X-DD**, **ADENA**, and **DERS**. The **PANEL (8)** is connected to an **X-DRIVER (22)** and a **Y-DRIVER (24)**. The **X-DRIVER (22)** outputs **X1**, **X2**, **X3**, ..., **XM** to the panel. The **Y-DRIVER (24)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the panel. The **PANEL (8)** is also connected to an **X-ADDRESS DRIVER (21A)** and an **X-DATA DRIVER (21B)**. The **X-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **X-DRIVER (22)**. The **X-DATA DRIVER (21B)** outputs **X1**, **X2**, **X3**, ..., **XM** to the **X-DRIVER (22)**. The **PANEL (8)** is connected to a **Y-SCAN DRIVER (23)** and a **Y-DATA DRIVER (23A)**. The **Y-SCAN DRIVER (23)** outputs **Y-CLOCK** and **Y-STB1** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (23A)** outputs **Y-DATA** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and **A-DATA** to the **Y-DRIVER (24)**. The **Y-DATA DRIVER (21B)** outputs **Y1**, **Y2**, **Y3**, ..., **YN** to the **Y-DRIVER (24)**. The **PANEL (8)** is connected to a **Y-ADDRESS DRIVER (21A)** and a **Y-DATA DRIVER (21B)**. The **Y-ADDRESS DRIVER (21A)** outputs **A-CLOCK** and

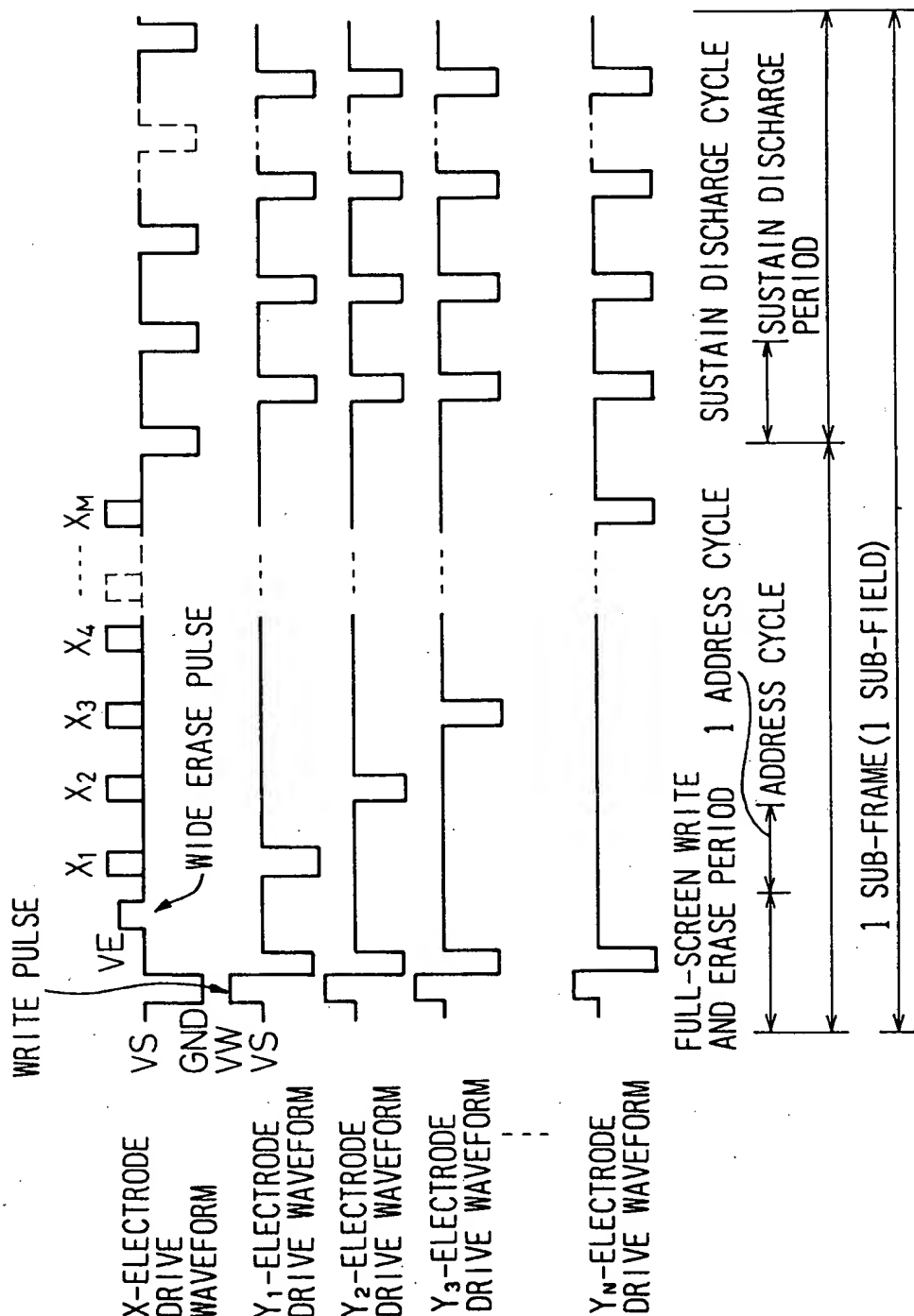


Fig.16

Fig.6A

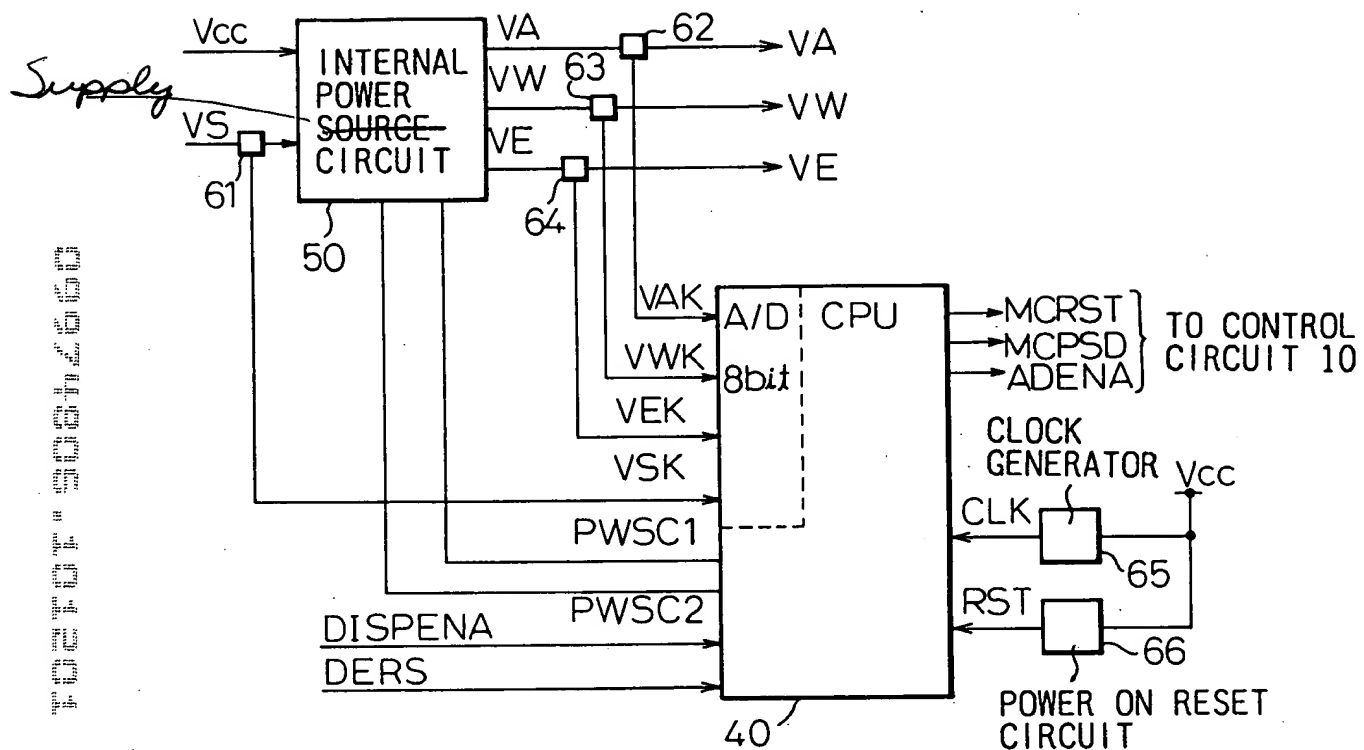


Fig.6B

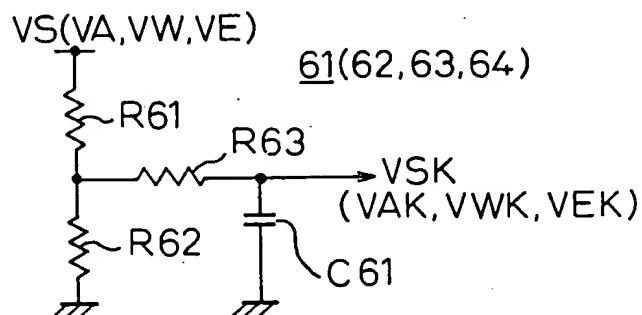


Fig.14

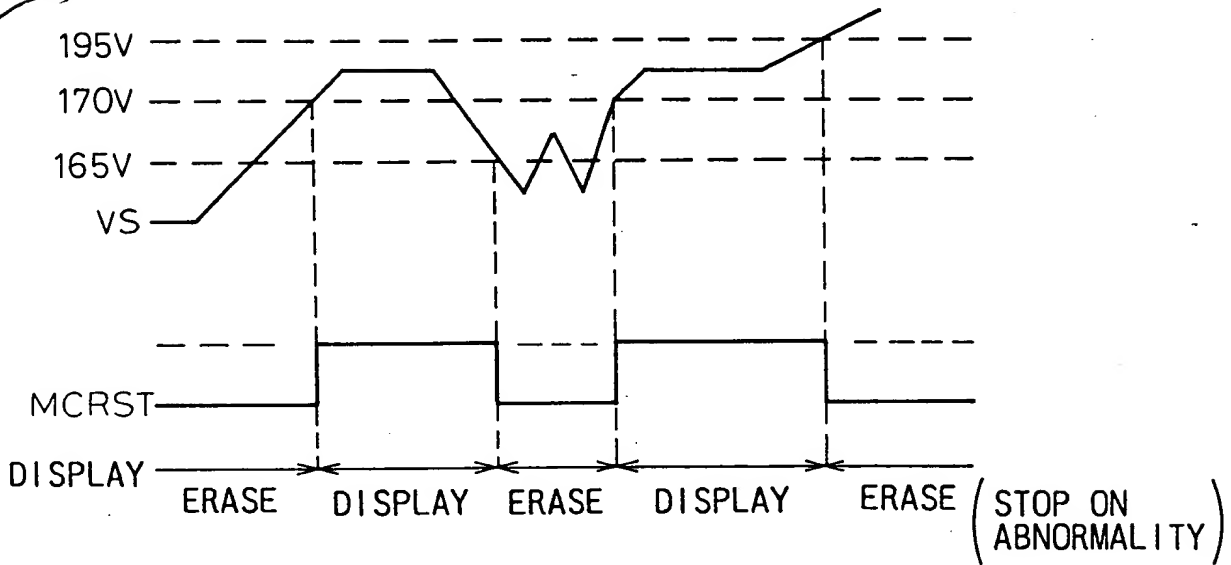


Fig. 14